Candida Septicemia

INVASION OF THE bloodstream by Candida organisms occurs most frequently in patients in hospital in whom prolonged intravenous catheterization has been required. Especially susceptible are patients with burns and those given intravenous antibiotics or parenteral hyperalimentation. In such cases Candida organisms from the skin or possibly the bowel colonize the catheter tip and surrounding vein, creating a nidus for continuous hematogenous infection. Drug addicts may infect their veins by injecting material contaminated with Candida organisms, and, rarely, in an uncontrolled diabetic candidemia develops when bladder thrush extends to the renal pelvis and invades the papillae.

Candida septicemia is heralded by fever and occasionally by hypotension and confusion, so that it may be mistaken for Gram negative bacteremia. The fluffy white exudates of Candida chorioretinitis provide a helpful clue when present. A urine smear showing Candida organisms offers supporting but by no means conclusive evidence. Candida organisms grow readily in routine blood culture media but a presumptive diagnosis of candidemia can be made immediately if a colony of yeast is found on direct smear of a catheter tip. The recent discovery that Candida albicans septicemia in man can be detected by gas-liquid chromatography of serum has provided a promising rapid diagnostic tool. By the use of this technique, which identifies breakdown products of yeast cell wall sugars, cases of candidemia have been identified and treated several days before the blood cultures turned positive.

Candidemia usually resolves within a few days after removal of a contaminated catheter unless a new one is inserted immediately in its place. Frankly purulent veins should be excised. More vigorous treatment is required if fever and fungemia persist, if azotemia or metastatic abscesses develop, or if cardiac valvular disease is present. In such cases both amphotericin B and 5-fluorocytosine (5-FC) should be given until 5-FC sensitives are determined, since some strains of Candida organisms are resistant to 5-FC. Infected cardiac valves generally must be replaced.

ELIZABETH J. ZIEGLER, MD

REFERENCES

Miller GG, Witwer MW, Braude AI, et al: Rapid identification of Candida albicans septicemia in man by gas-liquid chromatography. J Clin Invest 54:1235-1240, Nov 1974

Edwards JE Jr, Foos RY, Montgomerie JZ, et al: Ocular manifestations of Candida septicemia: Review of seventy-six cases of hematogenous Candida endophthalmitis. Medicine (Baltimore) 53:47-75, Jan 1974

Plasma Calcitonin Measurement As a Marker for Cancer

THE MEASUREMENT of plasma calcitonin by radioimmunoassay can serve as a marker for the diagnosis of certain types of cancer. The value of this procedure is best documented for medullary thyroid carcinoma, a tumor that can occur sporadically or on a familial basis, usually as part of a multiple endocrine adenomatosis (MEA Type II). This tumor occurs in the calcitonin-secreting cells of the thyroid gland, and in patients with medullary thyroid carcinoma, therefore, abnormally high plasma levels of calcitonin are found. In most patients with this tumor, the diagnosis can be established by the relatively simple measurement of an abnormally elevated plasma calcitonin level by radioimmunoassay. However, in some patients basal calcitonin levels are indistinguishable from normal, and provocative infusions of calcium or gastrin are necessary to produce diagnostic elevations of the hormone.

Selective venous catheterization in combination with calcitonin immunoassay can help to define the extent and location of the tumor and serial hormone measurements can be used to monitor therapy. Early application of these procedures can result in diagnosis of cancer while it is still confined to the thyroid gland and potentially curable by thyroidectomy. This consideration is especially important for screening the relatives of an affected patient since the syndrome is inherited on an autosomal dominant basis. Therefore, the diagnosis in one patient often leads to the early diagnosis of unsuspected tumor in relatives of the patient.

Recent studies suggest that there may be a wider diagnostic application of the calcitonin assay. Some thyroid tumors that do not have the classical histological pattern of medullary thyroid carcinoma also seem to produce abnormal amounts of calcitonin. Therefore, measurement of the hormone may be diagnostically useful in other types of thyroid cancer. Perhaps of greater potential importance is the observation that several nonthyroid tumors can ectopically produce abnormal concentrations of calcitonin. Therefore, calcitonin radioimmunoassay may have even wider clinical application in the diagnosis of cancer.

LEONARD J. DEFTOS, MD

REFERENCES

Deftos LJ: Radioimmunoassay for calcitonin in medullary thyroid carcinoma. JAMA 227:403-406, Jan 28, 1974

Deftos LJ: The thyroid gland in calcium and skeletal metabolism, *In* Avioli LV, Krane S (Eds): Metabolic Bone Disease. New York, NY, Academic Press (In Press)